Crop cover selection to improve weed control in sugarcane agrosystems on Reunion Island

CHRISTINA M[1], MARNOTTE P[1], BERNARD R[1,2], COURTOIS J[1], MARIN Y[1], LATCHOUMY MV[1], CHABANNE A[1]

[1]CIRAD UPR AIDA, Saint-Denis, La Reunion, France; [2]eRcane, Saint-Denis, La Reunion, France

E-mail: mathias.christina@cirad.fr

Abstract

Cover crops are increasingly being used for weed management in tropical regions as an alternative to herbicides. However, selecting the most suitable cover crop to be associated with a main crop requires long-term investigation. Here we present details of a set of trials conducted over two years to assess the ability of various cover crops to limit weed growth in sugarcane agrosystems.

Firstly, 55 species/varieties were assessed in terms of their growth cycle and viability at three different locations in tropical conditions on Reunion Island. This trial allowed selection of cover crop species that would be suitable for either rotational cropping or intercropping with sugarcane.

Secondly, 10 species were selected and grown in large plots in four different trials. This allowed for assessment of their ability to limit weed growth in monospecific plots and where mixtures of cover crops were grown.

After two months of growth, the most productive cover crops showed the ability to limit weed growth to fewer than 30% of the plot (e.g. crotalaria, oat and millet). The less productive cover crops were unsuccessful in limiting weeds. In comparison, all combinations of two cover crops tested in this experiment were able to limit weed growth to fewer than 30% of the plot area.

These trials highlight some key cover crops that are suitable for intercropping and rotations in sugarcane agrosystems as alternative to herbicides.

Keywords: weed control, cover crop, multi-species, sugarcane, Reunion